

Counting Atoms Worksheet

Name: _____ Grade: _____

Instructions: Read each question carefully and solve by counting the total number of atoms using your knowledge of chemical formulas. Show your work if needed.

1. How many total atoms are in H_2O_2 ?
2. A student writes 3CO_2 . How many oxygen atoms are there in total?
3. In $2\text{Mg}(\text{OH})_2$, how many hydrogen atoms are there?
4. A water molecule is written as $5\text{H}_2\text{O}$. What is the total number of atoms?
5. How many total atoms are in $\text{C}_6\text{H}_{12}\text{O}_6$?
6. A compound $2\text{Al}(\text{NO}_3)_3$ is written. How many nitrogen atoms are present?
7. Find the total number of oxygen atoms in $3\text{Fe}_2(\text{SO}_4)_3$.
8. How many atoms are in Na_2SO_4 ?
9. If a student has $4\text{Ca}(\text{OH})_2$, how many calcium atoms are there?
10. How many total atoms are in the formula CH_3COOH ?

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Answer Key

1. $\text{H}_2\text{O}_2 \rightarrow \text{H} = 2, \text{O} = 2 \rightarrow \text{Total} = 4 \text{ atoms}$
2. $3\text{CO}_2 \rightarrow \text{O} = 2 \text{ per molecule} \times 3 = 6 \text{ oxygen atoms}$
3. $2\text{Mg}(\text{OH})_2 \rightarrow \text{H} = 2 \text{ per molecule} \times 2 = 4 \text{ hydrogen atoms}$
4. $5\text{H}_2\text{O} \rightarrow \text{H} = 2 \times 5 = 10, \text{O} = 1 \times 5 = 5 \rightarrow \text{Total} = 15 \text{ atoms}$
5. $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow \text{C} = 6, \text{H} = 12, \text{O} = 6 \rightarrow \text{Total} = 24 \text{ atoms}$
6. $2\text{Al}(\text{NO}_3)_3$: Each $(\text{NO}_3)_3$ has 3 N atoms. 2 molecules $\rightarrow 3 \times 2 = 6 \text{ nitrogen atoms}$
7. $3\text{Fe}_2(\text{SO}_4)_3$: Each SO_4 has 4 O atoms $\times 3 = 12 \text{ O per molecule}$. $12 \text{ O} \times 3 \text{ molecules} = 36 \text{ oxygen atoms}$
8. $\text{Na}_2\text{SO}_4 \rightarrow \text{Na} = 2, \text{S} = 1, \text{O} = 4 \rightarrow \text{Total} = 7 \text{ atoms}$
9. $4\text{Ca}(\text{OH})_2 \rightarrow \text{Ca} = 1 \text{ per unit} \times 4 = 4 \text{ calcium atoms}$
10. CH_3COOH : $\text{C} = 2, \text{H} = 4, \text{O} = 2 \rightarrow \text{Total} = 8 \text{ atoms}$